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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/648,139	08/25/2000	Keisuke Inoue	JP9200000185S1.	5347

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EXAMINER	
ORTIZ RODRIGUEZ, CARLOS R	
ART UNIT	**PAPER NUMBER**
2125	5

DATE MAILED: 09/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/648,139	INOUE ET AL.	
	Examiner	Art Unit	
	Carlos Ortiz-Rodriguez	2125	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 February 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☒ Claim(s) *1,4,7,14* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 1, 7 and 14 objected to because of the following informalities: The term "said surfaces" in claim 1 (line 11), claim 7 (line 12), and claim 14 (line 11) seems to be "said possible surfaces". Appropriate correction is required.

2. Claim 4 further objected to because of the following informalities: The term "an range" seems to be "and range". Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 1, 4, 7, 10, 14 and 17 are rejected under 35 U.S.C. 112, second paragraph.

Regarding claims 4 and 17, recite the limitation "said step of examining said possible surfaces" and "said step of examining said combinations". There is insufficient antecedent basis for this limitation in the claim.

Regarding claims 10, recite the limitation "said means for examining said possible surfaces" and "said means for examining said combinations". There is insufficient antecedent basis for this limitation in the claim.

Furthermore, regarding claims 4 and 17 rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the

steps. See MPEP § 2172.01. The omitted steps are: steps necessary stating how the step of examining utilizes the characteristics selected.

Furthermore, regarding claim 10 rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: elements necessary stating how the means of examining utilizes the characteristics selected.

Regarding claims 1, 7 and 14 rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps/elements, such omission amounting to a gap between the steps/elements. See MPEP § 2172.01. The omitted steps/elements are: steps/elements necessary for executing the "providing", "generating", "subjecting", "generating", "filling", "examining" and "sorting". It is unclear how these steps are executed.

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6. Claims 1-19 rejected under 35 USC § 101, because the claimed invention is directed to non-statutory subject matter. Claims are interpreted as a computer program/descriptive material.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-3, 5, 7-9, 11, 13-16, 18 and 20 rejected under 35 U.S.C. 102(b) as being anticipated by Bagali et al., "A Shortest Path Approach To Wireframe To Solid Model conversion", ACM Digital Library, 1995.

Regarding claims 1, 5, 7, 11, 14 and 18 Bagali et al. discloses a method for reconstructing surface geometry from discrete points on an object comprising steps of :

providing input data (end vertices) derived from said discrete points;

generating a graph (edge-disjoint paths P1, P2, P3, ...Pn) from said input data, said graph including biconnected graphs (2-edge disjoint paths between vertices);

subjecting said graph to triconnected component decomposition to generate a component graph (see Fig 1a); generating all possible embeddings including possible face loops from said component graph (see Fig 3); filling said possible face loops with possible surfaces to reconstruct said surface geometry (assembling the cycles); examining geometrical acceptance of said surfaces and omitting embeddings including at least one geometrically unacceptable surface from reconstruction (testing for double cover) and scoring said embeddings depending on said examination (adding to the cycle basis);

and sorting said embeddings (see page 345 "sorting the cycles") with respect to said scores to select embeddings for reconstructing said surface geometry.

Regarding claims 2, 8 and 15 Bagali et al. discloses the method, wherein said discrete points forms a wire-frame corresponding to said object (see Fig 1).

Regarding claims 3, 9 and 16 Bagali et al. discloses the method, wherein said examining and scoring step of said embeddings includes steps of:
examining geometrical acceptance of said possible surfaces and scoring said face loops (adding critical cycles to the cycle basis before any other cycle, see page 343 "4.4 2-Basis generation"); examining geometrical acceptance of combinations of said possible surfaces and scoring said combinations. Examining surface area of said embeddings and scoring said surface area is implicit to Bagali when adding critical cycles to the cycle basis before any other cycle.

Regarding claims 13 and 20 Bagali et al. discloses the system, wherein said system is a computer aided design system is implicitly disclosed by Bagali et al. (see page 346 "5.1 Algorithm results").

Citation of Pertinent Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following patents are cited to further show the state of the art with respect to surface topology and geometry reconstruction from wire-frame models:

a. U.S. Pat. No. 4,901,252 to Fitzgerald et al., which discloses method for producing planar geometric projection image.

b. U.S. Pat. No. 5,465,323 to Mallet, which discloses method for modeling a surface and device for implementing same.

c. U.S. Pat. No. 5,793,372 to Binns et al. which discloses methods and apparatus for rapidly rendering photo-elastic surfaces on 3-dimensional wire frames.

d. U.S. Pat. No. 6,762,759 to Lake et al., which discloses rendering a two-dimensional image.

The following publications are cited to further show the state of the art with respect to surface topology and geometry reconstruction from wire-frame models:

e. U.S. Pub. No. 2003/0128209 to Maekawa et al., which discloses shape-intrinsic watermarks for 3-D solids.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carlos Ortiz-Rodriguez whose telephone number is (703) 305-8009. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo P. Picard can be reached on (703) 308-0538. The central official fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Carlos Ortiz-Rodriguez
Patent Examiner
Art Unit 2125

cror

September 17, 2004

LEO PICARD
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100